CLASS I APPLICATION REVIEW

FOR:

Department of the Army
Hawthorne Army Depot
Mineral County, Nevada

Class I Minor Modification Application

Log Number 04AP0310

BY

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

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1.0 INTRODUCTION

The Hawthorne Army Depot (HWAD) Main Base is located on 144,441 acres of Federal land south of Walker Lake in Mineral County, Nevada in hydrographic basins HA109, 110B, and 110C. The Standard Industrial Classification Code (SIC) for the Main Base is 9711 National Security. HWAD's main purpose is to store munitions and demilitarize munitions that are no longer used by the Army by recovering the energetic materials from the munitions and recycling reclaimed metals. The facility is Government Owned and Contractor Operated. The primary contractor for HWAD is Day & Zimmerman Hawthorne Corporation (DZHC).

HWAD submitted the Class I minor modification application on March 25, 2004. The minor modification application was submitted to address the Hot Gas Decontamination Unit, which was built with a burner larger than permitted. HWAD originally applied for and received a permit for a unit with a 52-gallon per hour #2 diesel burner. However, HWAD discovered during shake down testing that the unit exceeded the 52-gallon per hour limit in the permit. The unit has been operating under a compliance order to allow the higher fuel consumption rate for continued shake down and verification operations while the modification application is being processed. This review focuses only on the Hot Gas Decontamination Unit.

1.1 PERMITTING HISTORY

NDEP-BAPC issued a Facility-Wide Class I-A Air Quality Operating Permit, AP9711-0863 to HWAD on February 4, 1999. In a letter dated September 30, 1999, HWAD requested a Minor Modification/Revision to remove various insignificant emission units and to add one hydraulic bailer and two generators. This request was processed and a Minor Modification/Revision was issued to HWAD on October 11, 1999.

On March 6, 2000, HWAD requested a Significant Modification/Revision of their existing permit, eliminating several significant and insignificant emission units, reducing hours of operation and annual fuel consumption. The changes resulted in an overall reduction in facility potential to emit (PTE). In addition, the proposed permit provided a practical and enforceable means of determining compliance and for tracking emissions from insignificant sources. The modified permit was issued July 10, 2000.

On November 27, 2000, HWAD submitted an application for a Significant Modification / Revision of their existing permit to add the Plasma Ordnance Disposal System (PODS) to the facility. The modification permit was issued on January 2, 2002. Once constructed, PODS will enable DZHC to demilitarize obsolete and unserviceable small arms ammunition, detonators, fuses, primers, smoke and incendiary munitions currently not treatable. Most of the materials to be treated in PODS are considered RCRA hazardous wastes due to their explosive/reactive nature. PODS meets the criteria of a "new" hazardous waste combustor (HWC), as defined in 40 CFR Part 63.1200(b)--Table 1, in *"National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors"* and will be subject to the Subpart EEE MACT standards. This permit was issued on January 2, 2002.

On April 11, 2001, NDEP-BAPC informed HWAD and DZHC of their intent to reopen and revise Air Quality Operating Permit AP9711-0863 to include the provisions of 40 CFR Part 63.1500 (e.g. Subpart RRR), *National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production*. NDEP-BAPC regulations require the reopening and revision of any Class I permit to include any new applicable requirements (e.g. implementation of Subpart RRR), pursuant to NAC 445B.325.1.

Based on the criteria defined in 40 CFR Part 63.1500(b)(5), the Aluminum King™ "sweat furnace" (emission unit S2.019) operated by DZHC at HWAD appeared to meet the criteria as an existing secondary aluminum production facility/source. As a result, the furnace would be subject to the Subpart RRR MACT standard. On March 14, 2002, HWAD/DZHC informed BAPC that it will stop operating the Aluminum King™ furnace after March 2002. Therefore, NDEP-BAPC will not include this furnace in the final HWAD's permit.

On April 16, 2001 HWAD submitted an application for a Significant Modification/Revision of their existing

Class I Air Quality Operating Permit, AP9711-0863 to establish limits and conditions for HWAD and DZHC to conduct open burning activities at the Old Bomb facility. HWAD is currently allowed to burn energetic and pyrotechnic materials in accordance with RCRA Permit #NEV HW0013 (EPA ID #NV1210090006). The RCRA permit allows HWAD to treat/destroy only those materials which cannot be processed through the Western Area Demilitarization Facility (WADF), material for which there is an insufficient quantity to warrant processing through WADF, or material which pose immediate health and safety concerns. Permit conditions also require HWAD to document through best-readily-available technology analysis, that waste munition materials burned at Old Bomb (located at HWAD Main Base) or detonated at New Bomb (22 miles south of HWAD Main Base, Class II Air Quality Operating Permit # AP9711-1134) could not be demilitarized by another means at HWAD. Until recently, NDEP-BAPC allowed for OB/OD of the above-mentioned materials on a case-by-case basis. All OB/OD activities will have specific permitted emission limits, conditions as well as enhanced monitoring and recordkeeping. In addition, NDEP-BAPC will require HWAD to continue their efforts in researching alternative technologies to treat munitions other than open burning or open detonation. This permit was issued on December 6, 2002.

On June 13, 2001, HWAD submitted an application for a Significant Modification/Revision of their current Air Quality Operating Permit to add the Hot Gas Decontamination System (HGDS) to the HWAD facility. The addition of HGDS would enable DZHC to effectively remove residual energetic material from scrap items initially processed through Western Area Demilitarization Facility (WADF). Removal of the energetic residues from the scrap is necessary prior to any reuse, storage and sale to the general public as scrap metal. Once operational, the HGDS would replace the Walker-Boudwin Flash Furnace, which was removed from the HWAD facility inventory in July 2000. This permit was issued on August 21, 2002.

On January 22, 2003, HWAD submitted an application for a Minor Modification/Revision of their current Air Quality Operating Permit for the Hot Gas Decontamination System. The minor revision allowed the installation of a two heat exchanger system instead of the current one heat exchanger system. This allows for better heat recovery and will use less fuel and lower emissions. Emissions will decrease to a range of 80% to 92% of current emissions. This permit was issued on April 7, 2003.

On April 23, 2003, HWAD submitted an application for a Minor Modification/Revision of their current Air Quality Operating Permit to add the Soil Vent Extraction and Thermal Oxidizer system. This system is to remediate a plume of fuel in ground water at the Building 336 Site. The system is designed to extract gasoline from the subsurface and combust it in the Thermal Oxidizer. The Thermal Oxidizer is supplemented with propane in order to maintain combustion temperature. This permit was issued on June 25, 2003.

On August 7, 2003 HWAD submitted the Class I renewal application. As part of the application, the determination was made that several generators owned by the Marine Corps were non-road engines, and do not belong on the insignificant unit list. Additional changes to the permit include removal of certain recordkeeping requirements associated with insignificant units, removal of units from the permit that have been removed from the facility and removal of permitted units which have been determined to be non-road engines. The recordkeeping requirements were to ensure that the facility did not exceed 250 tons/year of NOx emissions. With the re-classification of several units as non-road engines, the NOx potential to emit is below 100 tons/year, negating the need to track actual emissions. The renewed permit was issued on July 16, 2004.

On December 2, 2003 the Air Quality Operating Permit was amended to remove equipment no longer is service on HWAD. One permitted boiler was replaced with an insignificant (<4.0 MMBtu/hr) boiler; one insignificant boiler was replaced with another insignificant boiler; the hydraulic bailer was removed from the insignificant unit list as a non-road engine; and the Aluminum King aluminum/metal melting/recycling furnace was removed from the permit in accordance with a May 11, 2002 letter.

2.0 DESCRIPTION OF PROCESS

2.1 Hot Gas Decontamination System

The HGDS is located in Building 117-16 at WADF. It utilizes a thermal decomposition technology to remove energetic residues from equipment, scrap metal and debris to concentrations below detection limits. During the HGDS process, no solid or liquid waste materials are generated. Air emissions are generated from the combustion of diesel fuel and oxidation products of the energetic residue. The high temperature thermal oxidizer provides a 99.99% destruction efficiency for energetic materials.

The HGDS consists of a decontamination chamber, thermal oxidizer, heat exchanger/cooling system and control system. All process equipment is located outside with the exception of the decontamination chamber and control system. Decontamination is accomplished by subjecting the various contaminated items to a long duration, high temperature air stream. The items are first loaded by cranes onto a chamber rail car and then pushed into the decontamination chamber. A massive steel door covers the entrance and seals the chamber.

A hot air stream (approximately 1200 ^{O}F) is used to vaporize any residual energetic material. The contaminated air stream is then blown into the thermal oxidizer where a temperature is maintained between 1800 ^{O}F and 2000 ^{O}F from diesel combustion. Once decontamination is completed, the loaded chamber car is removed from the HGDS and allowed to cool. A portion of the hot gas exiting the thermal oxidizer's stack is directed through a heat exchanger to heat the incoming air stream to the decontamination chamber. A more detailed discussion of the HGDS system is available in the August 2002 Significant Modification Technical Review.

It was determined during the Renewal process that the HGDS was constructed with a burner larger than in the current permit. The installed burner consumes 80 gallons/hour of diesel fuel, where the current permit only allows for 52 gallons/hour. The larger burner was discovered during the "shake-down" of the HGDS. No waste material has been processed in HGDS, and HWAD in currently continuing the shake-down and verification operations under a compliance order issued by BAPC.

3.0 APPLICABLE REQUIREMENTS

Applicable requirements are those regulatory requirements that apply to a stationary source or to emissions units contained within the stationary source. In Nevada's program, the regulations governing the emissions of air pollutants from which the applicable requirements originate, are derived from four categories of regulations. These four categories consist of the requirements contained in the Nevada Revised Statutes (NRS), the Nevada Administrative Code (NAC), the Applicable State Implementation Plan (ASIP), and the Code of Federal Regulations (CFR), contained in various Parts within Title 40.

3.1 GENERALLY APPLICABLE REQUIREMENT

Of the four categories of regulations governing emissions of air pollutants, there are many generally applicable requirements that apply to stationary sources and emission units located at a stationary source. A comprehensive summary of all the generally applicable permit requirements is contained in Sections I through IV of the proposed operating permit provided in **Attachment 3**.

3.2 SPECIFIC APPLICABLE REQUIREMENT

The following table contains specific applicable requirements for the Hot Gas Decontamination unit.

TABLE 3.2.1 - Specific Applicable Standards

EU #	Unit Description	Applicable Standards					
		NAC (445B)	SIP (Article)	NSPS (Part 60)	NESHAPS (Parts 61, 63)	PSD (Part 52)	Acid Rain (Parts 72-78)
S2.044	Hot Gas Decontamination System, Model E-04-T-50-75, Serial 536-945, Bldg 117-16	.22017, .22027, .2203, .22033, .2204, .22043, .22047, .252	4.1, 7.1.1, 8.4	N/A	N/A	N/A	N/A

3.2.1 NEVADA REVISED STATUTES

The Nevada Revised Statutes (NRS) is the statutory authority for the adoption and implementation of administrative regulations. The statutes relating to the control of air pollution are contained in NRS 445B.100 through 445B.640. The NRS specifies that the State Environmental Commission is the governing body given the power to adopt administrative regulations. Because the NRS is the enabling statutory authority, very few specific requirements are contained in the statutes. Rather, the NRS provides, generally, broad authority for the adoption and implementation of air pollution control regulations.

3.2.2 NEVADA ADMINISTRATIVE CODE

The Nevada Administrative Code (NAC) is the administrative regulations that contain specific requirements relating to the control of air pollution. The State Environmental Commission adopts these regulations. The NAC requires that, where state regulations are more stringent in comparison to Federal regulations, the State regulations are applicable. The NAC sets forth, by rule, maximum emission standards for visible emissions (opacity), PM10 and sulfur emitting processes. Other requirements are established for incinerators, storage tanks, odors and maximum concentrations of regulated air pollutants in the ambient air. Other NAC regulations specify the requirements for applying for and method of processing applications for operating permits. All of the equipment considered in this application must meet, at a minimum, the applicable standards and requirements set forth in the NAC. Specifically, the emission standards contained in NAC 445B.2203 for particulate matter, 445B.22017 for opacity and 445B.22097 for the ambient air quality standards must not be exceeded.

3.2.3 NEVADA APPLICABLE SIP (ASIP)

The Applicable State Implementation Plan (ASIP) is a document, which is prepared by a State or Local air regulatory agency and required to be submitted to the U.S. EPA for approval. Title I of the Clean Air Act is the statutory authority for the U.S. EPA regulations that require a State to submit a SIP. The contents of the SIP are intended to show how a State, through the implementation and enforcement of the regulations contained in the SIP, will either show how attainment of the ambient air quality standards (NAAQS) will be achieved or how a State will continue to maintain compliance with the NAAQS. Nevada's most recent ASIP, which was approved by U.S. EPA, is based on State regulations codified in 1982. In general, the regulations contained in the ASIP closely parallel the current NAC regulations. However, because the ASIP is based on older air quality regulations (at this time), compliance with all of the current NAC regulatory requirements does not necessarily ensure compliance with the ASIP requirements. All of the equipment considered in this application must meet, at a minimum, the standards set forth in the ASIP. Specifically, the emission standards contained in ASIP 445.731 for particulate matter, SIP 445.721 for opacity and 12.1 for the ambient air quality standards must not be exceeded.

3.2.4 CODE OF FEDERAL REGULATIONS (CFR)

The Code of Federal Regulations (CFR) are regulations adopted by the U.S. EPA and published in the Federal Register pursuant to the authority of the granted by Congress in the Clean Air Act. The CFR addresses multiple aspects, including but not limited to, permitting requirements, performance standards, testing methods, and monitoring requirements.

3.2.4.1 New Source Performance Standards (NSPS)

The U.S. EPA has promulgated maximum emission standards and/or monitoring/ recordkeeping methods for selected source categories. These standards are contained in Title 40 of the CFR, Part 60, and are known as the New Source Performance Standards (NSPS). The Hot Gas Decontamination Unit is not subject to NSPS requirements.

3.2.4.2 National Emission Standards for Hazardous Air Pollutants (NESHAP)

The federal NESHAP provisions are contained in 40 CFR Parts 61 and 63. A summary of the emissions is contained in Section 4 of this review. HAP information was provided by HWAD and reviewed by BAPC. Based on the emissions, HWAD is a minor emitter of HAPs (i.e. emits less than 10 ST/yr of a single HAP or 25 ST/yr of a combination of HAP's). the Hot Gas Decontamination Unit is not subject to a NESHAP.

3.2.4.3 Prevention Of Significant Deterioration Regulations (PSD)

These regulations specify federally required permitting procedures for each "major stationary source". The PSD regulations define a "stationary source" as "*any building, structure, facility, or installation which emits or may emit any air pollutant subject to regulation under the Act*." A "building structure facility or installation" is defined as "*all of the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same 'Major Group' (i.e., which have the same first two digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement*."

"Major" is defined as the potential to emit of a stationary source, which equals or exceeds a specified threshold (in tons per year) of any air pollutant regulated under the Clean Air Act (40 CFR 52.21(b)(1)). The first threshold is for a stationary source that emits or has the potential to emit 100 tons per year or more and is defined as one of 28 specific categories of sources (see 40 CFR 52.21(b)(1)(i)(a)). The other applicability threshold is for any other stationary source that emits or has the potential to emit 250 tons per year (see 40 CFR 52.21(b)(1)(i)(b)). As mentioned above, the SIC code for this facility is 9711. Therefore, the major SIC grouping is 97, which is identified as "National Security and International Affairs" in the SIC manual. However, none of the 28 specific categories is representative of this facility. Therefore, major source status is classified at the 250 tons per year emission threshold for any pollutant regulated under the Act. As identified in Section 4.0 of this review, HWAD will not emit more than 250 tons per year for any regulated pollutant and is a minor source for PSD purposes.

3.2.4.4 Compliance Assurance Monitoring (CAM)

The U.S. EPA has promulgated requirements for sources to provide detailed monitoring plans that will ensure compliance with all applicable requirements. These monitoring requirements are contained in 40 CFR Part 64. Section 64.2 specifies that these monitoring requirements apply to a "pollutant specific emission unit at a major source" if all of the following are satisfied:

* The unit is subject to an emission limitation or standard;
* The unit uses a control device to achieve compliance with any such emission limitation or standard; and

* The unit has potential pre-control device (uncontrolled) emissions equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

The key factors that would require the submission of a CAM plan are: 1) the facility must be defined as a "major source"; and 2) the units must be subject to an emission limitation or standard (acid rain limitations and standards are not included). At this time BAPC has determined that no CAM plan is required for the Hot Gas Decontamination Unit. However, HWAD will need to submit a CAM plan for the PODS emission unit. The CAM plan will be submitted to BAPC within 60 days of the PODS Compliance Performance Test.

3.2.4.5 Acid Rain

HWAD does not operate any emission unit subject to the acid rain provisions.

4.0 EMISSIONS INVENTORY

4.1 EMISSIONS

Attachment 2 contains tables summarizing HWAD's proposed annual emission inventory. Table 4.1-1 shows the revised emissions in this modification application. Table 4.1-2 contains the revised total potential emissions for each pollutant generated on HWAD, including insignificant units. Table 4.1-3 shows the revised potential emissions for the permitted units only.

Table 4.1-1 – New Hot Gas Decontamination Emissions

Pollutant	Lbs/hour	Tons/year
PM	0.380	1.140
PM_{10}	0.380	1.140
NO_x	4.85	14.6
SO_2	1.117	3.35
Sulfur	0.56	1.68
CO	0.400	1.20
VOC	1.6×10^{-6}	4.8×10^{-6}
Pb	2.28×10^{-4}	6.83×10^{-4}
HAP	1.34×10^{-3} tpy single	2.03×10^{-3} tpy total

Table 4.1-2– Total Facility-Wide Emission Summary

Pollutant	Lbs/hour	Tons/year
PM	572.7	78.62
PM_{10}	569.3	73.78
NO_x	66.71	86.32
SO_2	42.36	32.12
Sulfur	21.18	16.05
CO	27.70	30.08
VOC	8.63	21.48
Pb	0.01	9.04
HAP	9.0 tpy single	21.52 tpy total

Table 4.1-3– Permitted Unit Emission Summary

Pollutant	Lbs/hour	Tons/year
PM	15.34	22.68
PM_{10}	10.31	11.03
NO_x	37.40	66.99
SO_2	21.89	25.06
Sulfur	10.92	12.54
CO	18.69	24.66
VOC	1.21	12.8
Pb	0.02	0.03
HAP	9.0 tpy single	18.07 tpy total

5.0 PREVENTION OF SIGNIFICANT DETERIORATION DETERMINATION

As discussed Section 3.2.4.3 above, 40 CFR Part 52.21 specifies that Prevention of Significant Deterioration (PSD) review is required for any new major stationary source or any major modification. A major source is defined as any pollutant emitting activities, which belong to the same two digit Source Industry Classification (SIC), and:

1. Emit 100 tons/yr or more of a regulated air contaminate as one of the listed categories of sources listed in 40 CFR 52.21; or

2. Emits 250 tons/yr or more of a regulated air contaminant and belong to any other category sources.

Since this facility is not classified as one of the listed categories of sources the potential to emit threshold of a regulated pollutant is 250 tons/yr. This modification will not cause HWAD emit more than 250 tons per year for any regulated pollutant and is a minor source for PSD purposes

6.0 AMBIENT AIR QUALITY IMPACT

The purpose of the air quality analysis is to demonstrate that the emissions from the stationary source will not cause or contribute to a violation of any applicable federal or state ambient air quality standards prior to the issuance of an operating permit. HWAD provided a modeling analysis as part of their application. The analysis is an ISCST3 model for all permitted sources, except the Soil Vent Extraction Unit and Old Bomb. The SVE Unit is a limited lifetime unit and will be removed from base, with primarily VOC emissions. Old Bomb was modeled using the Open Burn/Open Detonation Dispersion Model (OBODM). HWAD obtained the most recent year of on-site meteorological data available, 1998. The upper air data was obtained from the Reno, Nevada National Weather Surface station. The Bureau conducted a review of HWAD's modeling protocol and the results of the modeling analysis. The Bureau's expectations generally agreed with the impacts presented in the application. There are too many source parameters to enumerate in this review, however, electronic model input data is available for review.

Table 6.0-1 contains a summary of the ambient air quality standards and the maximum resultant impacts expected to occur due to the operations on HWAD, as modeled by the ISCST3 and OBODM models. These values are lower than reported in the Renewal Application Review. The environmental air quality impact analysis for the Renewal Application was based on combined emissions from units that were removed from service or no longer required listing in the permit. This is the most current ambient air quality analysis.

Table 6.0-1 Summary of Modeled Impacts

Pollutant	Averaging Time	Nevada Ambient Air Quality Standards ($\mu g/m^3$)	Highest Modeled Concentration
Carbon Monoxide	1 Hour	40,000	466
	8 Hour	10,000	**107**
Nitrogen Dioxide	Annual	100	10.3
PM_{10}	24 Hour	150	**55.4**
	Annual	50	1.88
Sulfur Dioxide	3 Hour	1300	75.4
	24 Hour	365	**29.7**
	Annual	80	6.63
Lead	Quarterly	1.5	0.02

6.1 PSD INCREMENT IMPACT

The facility is located across all or part of several hydrographic areas (HA) in Mineral County: HA109, 110B, and 110C. None of these basins have been triggered for any pollutants, however, a modification resulting in emissions above the significance threshold for any pollutant will trigger these basins and be subject to a full PSD/NSR review. At this time there is no increment to consume.

7.0 CONCLUSIONS / RECOMMENDATIONS

Based on the above review and supporting data and analyses, HWAD's request to renew their Class I operating permit for the HWAD will not violate any applicable requirements. The BAPC is currently processing a modification application for the HGDS, and BAPC is working with HWAD to resolve the non-compliant unit. The Modified Air Quality Operating Permit incorporating the increased emissions from HGDS will be issued subsequent to the issuance of the renewed Air Quality Operating Permit. As a result, I recommend that the conditions specified in the proposed operating permit be issued.

Attachment (1) Facility and Vicinity Map
Attachment (2) HWAD's Model Impact Summaries
Attachment (3) Proposed Operating Permit

_____ _____

Matthew A. DeBurle Date
Environmental Engineer

Reviewed and Approved by

_____ _____

Tina Regan Date
Permitting Supervisor

Attachment 1

Facility (and Vicinity) Map

Attachment 2

HWAD Environmental Evaluation

Attachment 3

Proposed Operating Permit